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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,211	06/29/2001	Marcel F.C. Schemmann	US010299	9327

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EXAMINER	
CURS, NATHAN M	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/896,211	SCHEMMANN ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 02 July 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-35,38 and 40-42 is/are rejected.

7)☒ Claim(s) 36,37 and 39 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 June 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the background shading of the various elements makes it difficult to read the names of the elements. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: the referred related application number is omitted (page 4, line 1).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 recites the limitation "feedback oscillator signal". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-9, 13, 17-25, 29, 33-35, 38, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US Patent No. 5019769).

Regarding claim 1, Levinson discloses an apparatus for maintaining a stable RF level in an optical link, said apparatus comprising: a transmitter section (fig. 3, elements 100, 150 and 160); a receiver section (fig. 3, element 220); a plurality of feedback loops operationally connected to said transmitter section (fig. 3, elements, 152, 116, B, 170, 162, 180, 176, 184, 100 and 150); and a plurality of feedback loops operationally connected to said receiver section (fig 3, elements 242, 170, 162, 180, A, 232 and 240); and wherein the transmitter section includes a laser producing an optical signal, the laser having a back facet communicating with

the optical signal, the laser including a back facet monitor circuit providing a back facet feedback signal depending on the optical signal (fig. 3, elements 100 and 116 and col. 3, lines 4-12 and col. 4, lines 10-12, lines 33-37 and line 56 to col. 5, line 18), the transmitter feedback loops including a signal level derived from a back facet feedback signal (fig. 3, element 116). Levinson disclose that the input signal is a high speed digital or analog signal (fig. 3, element Input Signal and col. 5, lines 56-58), and refers to applicability of the disclosure to laser transmission used for cable television signal communication (col. 2, lines 36-49), but does not explicitly describe the input signal as an RF signal. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the high speed input signal disclosed by Levinson would be an RF signal when applied to laser transmission for cable television signal communication, as cable television RF signals are well known.

Regarding claim 2, Levinson discloses the apparatus of claim 1, wherein the feedback loops perform at least one function selected from the group consisting of: i. RF level stabilization effects; ii. preserve or change optical modulation index (OMI); iii. adjust output power; iv. compensate for temperature changes; v. compensate for laser or system tracking errors; vi. provide gain at proper places in circuitry; and vii. provide RF input changes (col. 3, lines 5-12 and col. 4, lines 33-46 and col. 5, lines 1-18).

Regarding claim 3, Levinson discloses the apparatus of claim 1, wherein the feedback loops operationally connected to said transmitter section include a first, second, and third transmitter section feedback loops (fig. 3, elements B, 116, 176, 184 and 100)

Regarding claim 4, Levinson discloses the apparatus of claim 1, wherein the feedback loops operationally connected to said receiver section include a first and second receiver section feedback loops (fig. 3, elements 240, 242 and A).

Regarding claim 5, Levinson discloses the apparatus of claim 3, wherein the first transmitter feedback loop is a constant power feedback loop (fig. 3, element B and col. 5, lines 1-7).

Regarding claims 6 and 8, Levinson discloses the apparatus of claim 3, wherein the second transmitter feedback loop is a bias current feedback loop connected between the transmitter section and an attenuation circuit in an RF path (fig. 3, elements 176, 184 and col. 4, lines 56-68 and col. 5, lines 49-58).

Regarding claim 7, Levinson discloses the apparatus of claim 6, and an attenuation circuit (fig. 3, element 184). The applicant discloses that the attenuation circuit may include a diode, transistor, or other attenuation circuit (e.g., a PIN transistor circuit) (specification page 8, lines 13 and 14). This is not a disclosure of criticality for the attenuation circuit being a PIN transistor circuti. Absent any disclosure of criticality, the limitation of the attenuation circuit being a PIN transistor circuit would have been an obvious design choice.

Regarding claim 9, Levinson discloses the apparatus of claim 3, wherein the third transmitter feedback loop provides an RF level from a back facet monitor (fig. 3, element 116 and 184 and col. 5, lines 49-58).

Regarding claim 13, Levinson discloses the apparatus of claim 4, wherein the first receiver feedback loop is an optical modulation voltage (OMV) feedback loop, said optical modulation voltage feedback loop connected to RF circuitry in said receiver section (fig. 3, elements 240 and 232 and col. 7, lines 1-37).

Regarding claim 17, Levinson discloses a method of stabilizing an RF level in an optical link, said method comprising: providing an optical signal transmitter section (fig. 3, elements 100, 150 and 160); providing an optical signal receiver section (fig. 3, element 220); providing a plurality of feedback loops to said optical signal transmitter section (fig. 3, elements, 152, 116,

B, 170, 162, 180, 176, 184, 100 and 150); and providing a plurality of feedback loops to said optical signal receiver section (fig 3, elements 242, 170, 162, 180, A, 232 and 240); and wherein the transmitter section includes a laser producing an optical signal, the laser having a back facet communicating with the optical signal, the laser including a back facet monitor circuit providing a back facet feedback signal depending on the optical signal (fig. 3, elements 100 and 116 and col. 3, lines 4-12 and col. 4, lines 10-12, lines 33-37 and line 56 to col. 5, line 18), the transmitter feedback loops include an signal level derived from a back facet feedback signal (fig. 3, element 116). Levinson does not explicitly describe the input signal as an RF signal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input signal would be an RF signal as described above for claim 1.

Regarding claim 18, Levinson discloses the method of claim 17, wherein the feedback loops perform at least one function selected from the group consisting of: i. RF level stabilization effects; ii. preserve or change optical modulation index (OMI); iii. adjust output power; iv. compensate for temperature changes; v. compensate for laser or system tracking errors; vi. provide gain at proper places in circuitry; and vii. provide RF input changes (col. 3, lines 5-12 and col. 4, lines 33-46 and col. 5, lines 1-18).

Regarding claim 19, Levinson discloses the method of claim 17, wherein the feedback loops operationally connected to said transmitter section include a first, second, and third transmitter feedback loops (fig. 3, elements B, 116, 176, 184 and 100).

Regarding claim 20, Levinson discloses the method of claim 17, wherein the feedback loops operationally connected to said receiver section include a first and second receiver feedback loops (fig. 3, elements 242, 240 and A).

Regarding claim 21, Levinson discloses the method of claim 19, wherein the first transmitter feedback loop is a constant power feedback loop (fig. 3, element B and col. 5, lines 1-7).

Regarding claims 22 and 24, Levinson discloses the method of claim 19, wherein the second transmitter feedback loop is a bias current feedback loop connected between the transmitter section and an attenuation circuit in an RF path (fig. 3, elements 176, 184 and col. 4, lines 56-68 and col. 5, lines 49-58).

Regarding claim 23, Levinson discloses the method of claim 22, and an attenuation circuit (fig. 3, element 184). The applicant discloses that the attenuation circuit may include a diode, transistor, or other attenuation circuit (e.g., a PIN transistor circuit) (specification page 8, lines 13 and 14). This is not a disclosure of criticality for the attenuation circuit being a PIN transistor circuti. Absent any disclosure of criticality, the limitation of the attenuation circuit being a PIN transistor circuit would have been an obvious design choice.

Regarding claim 25, Levinson discloses the method of claim 19, wherein the third transmitter feedback loop provides an RF level from a back facet monitor (fig. 3, element 116 and 184 and col. 5, lines 49-58).

Regarding claim 29, Levinson discloses the method of claim 20, wherein the first receiver feedback loop is an optical modulation voltage (OMV) feedback loop, said optical modulation voltage feedback loop connected to RF circuitry in said receiver section (fig. 3, elements 240 and 232 and col. 7, lines 1-37).

Regarding claim 33, Levinson discloses an optical transmission system comprising: an optical signal transmitter section (fig. 3, elements 100, 150 and 160); an optical signal receiver section (fig. 3, element 220); a signal stabilization system operationally connected to said optical signal transmitter section (col. 5, lines 49-58); and a signal stabilization system operationally

connected to said optical signal receiver section (col. 7, lines 1-37); and wherein the transmitter section includes a laser producing an optical signal, the laser having a back facet communicating with the optical signal, the laser including a back facet monitor circuit providing a back facet feedback signal depending on the optical signal (fig. 3, elements 100 and 116 and col. 3, lines 4-12 and col. 4, lines 10-12, lines 33-37 and line 56 to col. 5, line 18), the transmitter feedback loops include a signal level derived from a back facet feedback signal (fig. 3, element 116). Levinson does not explicitly describe the input signal as an RF signal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input signal would be an RF signal as described above for claim 1.

Regarding claim 34, Levinson discloses the optical transmission system of claim 33, wherein the optical transmission system is applicable for a cable television (CATV) system (col. 2, lines 36-49).

Regarding claims 35 and 41, Levinson discloses an optical transmitter comprising: a modulated laser that converts an electronic signal into a modulated optical signal (fig. 3, element 100 and col. 5, lines 49-58), the laser including a back facet communicating with the modulated optical signal and a back facet circuit providing an back facet feedback signal from the back facet depending on the modulated optical signal (fig. 3, elements 100 and 116 and col. 3, lines 4-12 and col. 4, lines 10-12, lines 33-37 and line 56 to col. 5, line 18); an attenuation circuit to regulate the level of the electronic signal provided to the laser (fig. 3, element 184 and col. 5, lines 49-58); a bias circuit to control the laser bias depending on the back facet feedback signal (fig. 3, elements 176, 184 and col. 4, lines 56-68 and col. 5, lines 49-58); and a first feedback attenuation circuit to control the attenuation circuit depending on the back facet feedback signal (fig. 3, element 186 and col. 5, lines 49-58); an optical cable communicating with the modulated laser for transmitting the modulated optical signal (fig. 3, element 112); and

an optical receiver for receiving the modulated optical signal transmitted by the optical cable (fig. 3, element 220). Levinson does not explicitly describe the input signal as an RF signal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input signal would be an RF signal as described above for claim 1.

Regarding claim 38, Levinson discloses an optical receiver comprising: a photo diode circuit including a photo diode that converts a modulated optical signal to an electronic signal (fig. 3, element 224 and col. 7, lines 9-20), the photo diode having an optical modulation voltage and an optical modulation voltage circuit to control the optical modulation voltage and provide a first attenuation feedback signal depending on the optical modulation voltage (fig. 3, element 240 and col. 7, lines 31-37); an attenuation circuit to provide an attenuated signal based on the electronic signal and a feedback attenuation circuit to control the attenuation of the attenuation circuit depending on the first attenuation feedback signal depending on the optical modulation voltage (fig. 3, elements A, 232 and 242 and col. 7, lines 1-37). Levinson does not explicitly describe the input signal as an RF signal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input signal would be an RF signal as described above for claim 1.

Regarding claim 42, Levinson disclose an optical transmission system comprising: an optical transmitter for providing a modulated optical signal (fig. 3, elements 100 and Input Signal and col. 3, lines 4-12); an optical cable for transmitting the modulated optical signal from the optical transmitter (fig. 3, element 112); a photo diode circuit including a photo diode that converts the modulated optical signal to an electronic signal (fig. 3, element 224 and col. 7, lines 9-20), the photo diode having an optical modulation voltage, an optical modulation voltage circuit to control the optical modulation voltage and provide a first attenuation feedback signal depending on the optical modulation voltage (fig. 3, element 240 and col. 7, lines 31-37); an

attenuation circuit to provide an attenuated signal based on the electronic signal and a feedback attenuation circuit to control the attenuation of the attenuation circuit depending on the first attenuation feedback signal depending on the optical modulation voltage (fig. 3, elements A, 232 and 242 and col. 7, lines 1-37). Levinson does not explicitly describe the input signal as an RF signal, however, it would have been obvious to one of ordinary skill in the art at the time of the invention that the input signal would be an RF signal as described above for claim 1.

7. Claims 10-12, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US Patent No. 5019769) in view of Chiappetta (US Patent No. 6687466).

Regarding claims 10 and 26, Levinson discloses the apparatus and method of claims 9 and 25, respectively, but does not disclose an oscillator operationally connected to said third transmitter feedback loop. Chiappetta disclose an RF transmitter circuit with feedback (fig. 3 and col. 1, lines 34-37), including an oscillator adding to the input signal after the feedback-based attenuation and before the optical modulation and detecting the pilot signal in a transmission monitor feedback loop (fig. 3, element Pilot Tone and 307 and col. 1, lines 59-62, col. 4, lines 11-49 and col. 5, lines 53-58 and col. 8, lines 7-12). It would have been obvious to one of ordinary skill in the art at the time of the invention to add an oscillation pilot signal after the attenuator of Levinson (Levinson: fig. 3, element 184) and before optical modulation (Levinson: fig. 3, element 100), in order to provide the option of monitoring distortion products in the signal using the oscillation pilot signal via the back facet signal monitor feedback, to further assess operation of the transmitter and detect odd-order distortion, as taught by Chiappetta.

Regarding claims 11 and 27, the combination of Levinson and Chiappetta disclose the apparatus and method of claims 10 and 26, respectively, and disclose an oscillator frequency of 43.25 MHz (Chiapetta: col. 7, lines 51-60 and col. 8, lines 7-12). In addition, the applicant

discloses that "oscillator circuit 445 introduces a signal tone of e.g., 100 kHz or thereabouts" (specification page 8, lines 20-21). This disclosure of "100 kHz or thereabouts", provided as an example ("e.g."), is not a disclosure of criticality for the limitation of the oscillator circuit frequency. Absent any disclosure of criticality, the limitation of the oscillator frequency would have been a result of obvious engineering design choice.

Regarding claims 12 and 28, the combination of Levinson and Chiappetta disclose the apparatus and method of claims 10 and 26, respectively, wherein said oscillator has an output signal, said output signal coupled to an input of an RF detector, said RF detector having an attenuating output proportional to said input, and said attenuating output coupled to an attenuation circuit in an RF path (Levinson: fig. 3, elements 116 and 184 and col. 3, lines 4-12 and col. 5, lines 49-58).

8. Claims 14-16, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US Patent No. 5019769) in view of Little et al. (US Patent No. 5267071).

Regarding claims 14 and 30, Levinson discloses the apparatus and method of claims 4 and 30, respectively, and disclose the second receiver feedback loop used for control the received RF signal level (fig. 3, elements 242 and A and col. 7, lines 1-37) but does not disclose that the second receiver feedback loop is an oscillator signal feedback loop. Little et al. disclose an RF receiver where a pilot channel used in transmission and is detected and used in a receiver feedback loop to maintain a constant channel output level (fig. 4, elements 407, 413, 414, 412 and 405 and col. 4, lines 9-23 and col. 8, lines 43-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to add a pilot signal in transmission and to detect the pilot signal in the feedback configuration of the receiver of Levinson, in order

to maintain a constant RF signal output level of the output from Levinson to compensate for environmental fluctuations of the system, as taught by Little et al.

Regarding claims 15 and 31, the combination of Levinson and Little et al. disclose the apparatus and method of claims 14 and 30, respectively, and disclose an oscillator frequency of 6-10 MHz (Little et al.: col. 8, lines 43-60). In addition, the applicant discloses that "oscillator circuit 445 introduces a signal tone of e.g., 100 kHz or thereabouts" (specification page 8, lines 20-21). This disclosure of "100 kHz or thereabouts", provided as an example ("e.g."), is not a disclosure of criticality for the limitation of the oscillator circuit frequency. Absent any disclosure of criticality, the limitation of the oscillator frequency would have been a result of obvious engineering design choice.

Regarding claim 16 and 32, the combination of Levinson and Little et al. disclose the apparatus of claims 14 and 30, respectively, wherein said oscillator feedback loop includes a device to demodulate said oscillator feedback (Little et al.: fig. 4, elements 407 and 414 and col. 8, lines 43-60).

Allowable Subject Matter

9. Claims 36, 37 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments with respect to claims 1-34 have been considered but are moot in view of the new ground(s) of rejection.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

12. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER